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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,180	12/09/2005	Richard Joseph Fagan	C&R-108	1199

23557 7590 07/18/2008

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EXAMINER	
JIANG, DONG	
ART UNIT	PAPER NUMBER
1646	

MAIL DATE	DELIVERY MODE
07/18/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,180	FAGAN ET AL.	
	Examiner	Art Unit	
	DONG JIANG	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *67-94* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *67-94* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED OFFICE ACTION

Applicant's amendment filed on 29 February 2008 is acknowledged and entered. Following the amendment, claims 46-66 are canceled, and the new claims 67-94 are added.

Currently, claims 67-94 are pending, and under consideration.

Withdrawal of Objections and Rejections:

All objections and rejections of claims 45, 65 and 66 are moot as the applicant has canceled the claims.

New Matter Rejection

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 67 and 80-94 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants have not pointed out, nor can the Examiner locate, the basis in the specification for the limitations 1) "having IL-8 like chemokine function" in claims 67-94; and 2) "at least n consecutive amino acids" in claims 67 and 80-94.

With respect to "having IL-8 like chemokine function" in claims 67-94, it necessarily means the function of IL-8, whereas the limitation as originally filed (claim 46, a)-2), for example) recites "functions as a member of the IL-8-like chemokine family" is not limited to the function of IL-8, rather, it encompasses any and all functions possessed by all members of the family. As such, the scope of the limitation in the new claims has changed in comparison to the limitation as originally filed.

With respect to "at least n consecutive amino acids" in the claims 67 and 80-94, it is noted that the specification states "[T]he fragments *should* be comprise at least n consecutive amino acids from the sequence" (page 14, lines 16-17). However, the specification does not define what "n" encompasses. The specification merely states "depending on the particular sequence, n *preferably* is 7 or more (for example, 8, 10, 12, 14, 16, 18, 20 or more)" (page 14, lines 16-17). Thus, the specification indicates a genus without disclosing either the specifically claimed fragments or sufficient number of species to establish entitlement to the claimed fragments. For example, "at least 20" (disclosed in the specification) does not have the same scope as that of "at least 45" (or 60, 75, 90, 105, 115). In *Purdue Pharma L.P. v. Faulding Inc.*, 230 F.3d 1320, 1326, 56 USPQ2d 1481, 1486 (Fed. Cir. 2000), the court noted with respect to *In re Ruschig* 379 F.2d 990, 154 USPQ 118 (CCPA 1967) that "Ruschig makes clear that one cannot disclose a forest in the original application, and then later pick a tree out of the forest and say 'here is my invention'; in order to satisfy the written description requirement, the blaze marks directing the skilled artisan to that tree must be in the originally filed disclosure".

This is a new matter rejection.

Rejections under 35 U.S.C. §101 and §112:

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 67-94 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility, for the same reasons set forth in the same rejection for claims 46, 65 and 66 in the last Office Action mailed on 03 October 2007, at pages 3-5.

Applicants argument filed on 29 February 2008 has been fully considered, but is not deemed persuasive for the reasons below.

At pages 8-9 of the response, the applicant argues, citing the Pisabarro reference, that as noted in that reference, a fold recognition algorithm was utilized to identify and characterize a novel chemokine-like protein (DMC), and this system predicted DMC to have an IL-8-like

chemokine fold and to be structurally and functionally related to CXCL8 and CXCL 14, that the reference further report that, consistent with their predictions, DMC induces migration of monocytes and immature dendritic cells. Applicants further argue that the Pisabarro reference is relevant to the instant claims as Applicants have utilized a system similar to that reported in the reference; that a sophisticated proprietary system "GENOME THREADER" was used to assist the functional annotation of the protein, and to identify the claimed polypeptides as members of the IL-8 family of polypeptides relies on sequence homologies, structural homologies and other relationships; that as indicated in Example 2 and Figure 3, the system predicted, with 65% confidence, that INSP094 has a protein fold that is similar to MIP-1β (Figure 4) shows an alignment to these two proteins in which the conserved cysteine residues are highlighted; and that the aligned polypeptides exhibit conserved cysteine motifs that are consistent with CC chemokines, thus, the prediction of IL-8-1ike activity for the claimed polypeptide is based upon more than structural similarity to a known protein and is based upon structural information that does not rely, solely, on sequence comparisons; that one skilled in the art would have recognized, based upon the examples provided in the as-filed application, that the claimed polypeptides would have been expected to function in a fashion similar to MIP-1β.

This argument is not persuasive for the following reasons: first, while MIP-1β ("the top hit" from applicants sequence analysis) is a member of the family of CC chemokines, IL-8 is a **CXC** chemokine. Therefore, applicants own data indicate that the claimed polypeptides may not even be an IL-8 like chemokine. Further, *even if* the claimed polypeptides were "IL-8 like", the instant application fails to disclose any functional property directly associated to the claimed polypeptides. Given the fact that IL-8 has a broad range of activities, and play a role in diverse physiological/pathological conditions such as inflammation and angiogenesis, there is no way for one skilled in the art to predict what functional property said polypeptides may have that were "IL-8 like". The art has established that members of a chemokine family (or any family) do not share all or identical functional properties. For example, Pisabarro et al. *(J. Immunol.,* 2006, 176:2069-2073, cited by applicants) demonstrated by experimentation (after sequence analysis and prediction) that the predicted CXC chemokine-like protein DMC (structural similarities between some members of the IL-8 chemokine family) specifically induced migration of

monocytes and dendritic cells, however, unlike IL-8, it did not attract peutrophils (page 2017, the right column), the primary target cells of IL-8. While sequence analysis systems may be used to assist the prediction of functional properties of a protein, the art has not established that any sequence analysis system can be used to confirm functional properties of a protein without experimental functional analysis. Therefore, even with the "sophisticated proprietary system" such as 'GENOME THREADER', experimentations are required to confirm functional properties of a protein, which is exactly what Pisabarro has done. Pisabarro teaches that, after the sequence analysis, "[T]o *test whether* human DMC shows chemotactic activity, we expressed his-tagged DMC in *E.coli* and *performed Transwell migration assays* with human PBMC" (page 2017, the right column), which demonstrated that the functional properties of DMC are not all the same as that of IL-8. In contrast, the instant application merely did sequence analysis, and no functional analysis was ever carried out. Given the confusing sequence analysis of the claimed polypeptides, which predicted a CC (*not* CXC) chemokine, and lack of functional analysis in the instant application, one of skilled in the art would have no idea as to the functional property of said polypeptides. Clearly, further research and experimentation would be required for defining the utility of the claimed polypeptides, and a utility that requires or constitutes carrying out further research to identify or reasonably confirm a "real world" context of use is not considered a substantial utility.

At pages 9-10 of the response, the applicant argues, citing case law, that the Federal Circuit has also held that the identification of a pharmacological activity of a compound that is relevant to an asserted pharmacological use provides an "immediate benefit to the public" and thus satisfies the utility requirement; that the Court of Customs and Patent Appeals stated that knowledge of the pharmacological activity of any compound is obviously beneficial to the public; that the Court of Appeals for the Federal Circuit has also found utility for therapeutic inventions despite the fact that the invention may be at a very early stage in the development of a pharmaceutical product or therapemic regimen based on a claimed pharmacological or bioactive compound or composition. Applicants further argue that, accordingly, the asserted activity of the claimed polypeptide as an IL-8-1ike chemokine is a specific and substantial utility and that one skilled in the art would have found the asserted utility credible and known how one was to use the claimed polypeptides, particularly in view of the disclosure in the as-filed specification that

the claimed polypeptide is expected to have a fold similar to that of MIP-1β, which is art-recognized to be a monokine with inflammatory and chemokinetic properties, and is one of the major HIV-suppressive factors; and that one skilled in the art would have recognized that the claimed polypeptides, more likely than not, would function in a fashion similar to MIP-1β and the use of such polypeptides would have also been well-known to those skilled in the art.

This argument is not persuasive because it is irrelevant as the claimed polypeptides are nowhere near being a pharmacological or for a pharmacological use. It is not even clear whether said polypeptides are "IL-8 like" (as claimed), and the specification fails to disclose any functional property or biological significance directly associated to the claimed polypeptide of SEQ ID NO:10 or 12. Without such knowledge, or their association to a specific disease or condition, one cannot begin to assert the "pharmaceutical use" for the polypeptides as one of skilled in the art would not know what can be so diagnosed or treated using the polypeptides. With respect to MIP-1β, the established utility for a known protein cannot be automatically applied to said IL-8 like chemokine in the absence of any supporting evidence for the reasons addressed above.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 67-94 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claims 67 and 72-94 are further rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention, for the reasons of record set forth

in the same rejection for claim 46 in the last Office Action mailed on 03 October 2007, at pages 6-8.

The new claims 67 and 72-94 encompass % variants (claims 67 and 72-79, for example) and "functional" fragments of SEQ ID NO:10 or 12 (claims 67 and 80-94, for example), wherein the variants or fragments of SEQ ID NO:10 or 12 have "IL-8 like chemokine function". The specification discloses two INSP094 splicing variants, SEQ ID NO:8 and 10, and a C-terminal fragment thereof, SEQ ID NO:12. No other INSP094 variant meeting the limitations of the claim was ever identified or particularly described.

As addressed in the last Office Action, like "functions as a member of the IL-8-like chemokine family", the new limitation "having IL-8 like chemokine function" is not meaningful because it is unclear what it encompasses as IL-8 has diverse functional activities and family members do not necessarily share the same functional activity, and as there is no specific functional property for the INSP094 polypeptides of SEQ ID NO:10 and 12 has ever been disclosed. Thus, the claim encompasses a genus of polypeptides that are defined only by partial amino acid sequence identity (% variants/fragments) and unclear functional activity. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Applicants argument filed on 29 February 2008 has been fully considered, but is not deemed persuasive for the reasons below.

At page 12 of the response, the applicant argues "functions as a member of the IL-8 like chemokine family" refers to polypeptides that comprise amino acid sequence or structural features that can be identified as conserved features within the polypeptides of the IL-8 like chemokine family; and that as set forth in the Examples, one skilled in the art would have recognized that the claimed proteins would function similarly to MIP-1β, the member of the IL-8-like chemokine family to which the claimed protein is most related. This argument is not persuasive for the following reasons: first MIP-1β is not the member of the IL-8-like chemokine family. Further, even if "having IL-8 like chemokine function" were meaningful, there is no teaching in the specification regarding structural and functional relationship, or regarding which 10% (for example) of the structure can be varied, or which portion of the recited sequence should

be chosen while retaining the desired functional activity. Further, there is no art-recognized correlation between any structure (other than SEQ ID NO:10) and the recited activity. As such, one of ordinary skill would not be able to identify without further testing which of those proteins having at least 90% identity to SEQ ID NO:10 or 12 (if any) have the recited activity. Based on the lack of knowledge and predictability in the art, those of ordinary skill in the art would not conclude that the applicant was in possession of the claimed genus of polypeptides based on disclosure of the two INSP094 splicing variants of SEQ ID NO:8 and 10.

Conclusion:

No claim is allowed.

Advisory Information:

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to Dong Jiang whose telephone number is 571-272-0872. The examiner can normally be reached on Monday - Friday from 9:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol, can be reached on 571-272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Dong Jiang/
Primary Examiner, Art Unit 1646
6/6/08